

Amendments to the Drawings:

The attached drawing sheet includes changes to Figure 1. In Figure 1, reference number designations are added for the PC 2, the USB port 4, and the USB cable 6. Also, the memory 14 and the signal processor 22 of the PC are shown. The memory includes software instructions 16 and samples 12, as explained in the specification of the present application. The signal processor includes hardwired circuitry 20 with XOR logic 18 and summation logic 24, as explained in the specification of the present application. These amendments to the drawings are supported by the written description in the specification, for example, at page 3, line 7, through page 4, line 23, of the present application.

REMARKS/ARGUMENTS

In the Office Action mailed October 29, 2008, claims 1-13 were rejected. Additionally, the specification was objected to. Additionally, the drawings were objected to. In response, Applicants hereby request reconsideration of the application in view of the amendments and the below-provided remarks. No claims are added or canceled.

For reference, claims 1, 6, and 13 are amended. In particular, claim 1 is amended to recite word-based, hard-wired operation. Claim 6 is amended to recite similar language. These amendments are supported, for example, by the subject matter described in the specification at page 4, lines 14-23, of the present application. Claim 13 is amended to recite instructions stored on a memory device which, when executed by a processor, perform the indicated method. This amendment is supported, for example, by the subject matter described in the specification at page 4, lines 18-20, of the present application.

Objections to the Specification

The Office Action objects to the specification because the abstract is not on a separate sheet. By way of amendment to the specification herein, the abstract is presented on a separate sheet. Accordingly, Applicants respectfully request that the objection to the specification be withdrawn.

Objections to the Drawings

The Office Action objects to the drawing for not showing any claimed subject matter. While Applicants believe that the original drawing sufficiently shows the claimed subject matter, Applicants submit a replacement drawing sheet for Fig. 1 in order to advance prosecution on the merits. The amendments to Fig. 1 are explained in detail above. In light of the amendments to Fig. 1, Applicants submit Fig. 1 sufficiently shows the claimed subject matter. Accordingly, Applicants respectfully request that the objection to the drawings be withdrawn.

Claim Rejections under 35 U.S.C. 112, first paragraph

Claims 5 and 10 were rejected under 35 U.S.C. 112, first paragraph, as purportedly failing to comply with the enablement requirement. Specifically, the Office Action states that the specification does not sufficiently describe how the first and third words are formed and then how the correlation value is calculated.

Applicants respectfully submit that the limitations related to forming the first and third words are sufficiently described in the specification to enable one skilled in the art to understand the claimed subject matter. In particular, the claims themselves adequately describe how to form the first and third words. Claim 5 states that “the first word is formed by combining the magnitude bit or bits of at least two signal samples.” Claim 5 also states that “a third word is formed by combining the sign bit of at least two signal samples. For a proper contextual understanding, claim 5 also states that “each sample...contains at least one magnitude bit and a sign bit.” Thus, the first word is formed by a combination of the magnitude bits of two samples, while the third word is formed by a combination of the sign bits of two samples. Given this clear and detailed explanation of how the first and third words might be formed, Applicants submit that the limitations related to forming the first and third words is sufficiently described in the specification to enable one skilled in the art to understand how to form the first and third words, as recited in the claims.

Applicants respectfully submit that the limitations related to calculating the correlation value are also sufficiently described in the specification to enable one skilled in the art to understand the claimed subject matter. In particular, the specification explains how to use XOR and summation operations to combine 1-bit samples. Page 3, line 29, through page 4, line 23. The specification also states that variants of the 1-bit sampling can be used for multi-bit sampling. Page 5, lines 15-16. More specifically, the specification describes a case of 1.5-bit sampling which uses signed bit values (i.e., 1, 0, and -1), in which the sign and magnitude words are separately formed (as discussed above with reference to claim 5), the sign word is processed as a 1-bit value, and the magnitude word is processed as a mask in the bit count operation. Page 5, lines 16-19. Thus, the specification provides details as to calculating a correlation value from the first (sample magnitude), second (replica signal), and third words (sample sign) referenced in

the claims. Given this explanation of how the sign and magnitude words might be processed, Applicants submit that the limitations related to calculating the correlation value is sufficiently described in the specification to enable one skilled in the art to understand how to calculate the correlation value from the first, second, and third words, as recited in the claims.

Therefore, Applicants assert the indicated claim language is adequately supported by the specification so as to enable one skilled in the art to understand the claimed subject matter. Accordingly, Applicants respectfully request that the rejections of claims 5 and 10 under 35 U.S.C. 112, first paragraph, be withdrawn.

Claim Rejections under 35 U.S.C. 101

Claim 13 was rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. In particular, the Office Action states that claim 13 recites a computer program, which is non-statutory subject matter. Applicants submit that claim 13 is amended to recite statutory material. Specifically, claim 13 recites a computer program comprising instructions stored on a memory device. Accordingly, Applicants respectfully request that the rejection of claim 13 under 35 U.S.C. 101 be withdrawn.

Claim Rejections under 35 U.S.C. 102 and 103

Claims 1, 2, 4, 6, 7, 9, and 11-13 were rejected under 35 U.S.C. 102(b) as being anticipated by Medlock (U.S. Pat. Pub. No. 2001/0048713, hereinafter Medlock). Additionally, claims 3 and 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Medlock in view of Laudel et al. (U.S. Pat. No. 6,657,986, hereinafter Laudel). Additionally, claims 5 and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Medlock in view of Harrison et al. (U.S. Pat. No. 5,982,811, hereinafter Harrison). However, Applicants respectfully submit that these claims are patentable over Medlock, Laudel, and Harrison for the reasons provided below.

Independent Claim 1

Claim 1 recites “executing one or more software based instructions to carry out word-based, hard-wired operations to process the first and second words in order to obtain a correlation value” (emphasis added).

While the details of the specification are not read into the limitations of the claim, it may be useful to refer to the specification of the present application for a contextual understanding of the limitations recited in the claim. The specification of the present application describes processing GPS IF signal samples using word-based operations and appropriate software hooks. Page 4, lines 18-20. Each word includes the bits from at least two samples of a corresponding signal. Page 4, lines 14-18. Compared with conventional bit-based processing, embodiments of the described word-based processing can achieve an effective reduction in the number of operations and, hence, a reduction in the consumption of processing resources. Page 4, lines 24-31.

In contrast, Medlock does not disclose word-based processing to obtain a correlation value. Although Medlock describes a process of performing parallel searches for a phase offset between first and second signals (Medlock, paragraph 27, lines 4-6), Medlock expressly states that the sub-steps used in the correlation process are implemented one chip at a time (Medlock, paragraph 50, lines 8-10). In direct-sequence spread spectrum (DSSS) coding such as code division multiple access (CDMA) techniques described in Medlock, a chip is essentially analogous to a bit. Thus, the description in Medlock of processing one chip at a time is at best analogous to processing one bit at a time. However, processing one chip or bit at a time is insufficient to disclose word-based processing because processing one chip or bit at a time does not describe or enable processing multiple bits at the same time. Since processing one chip or bit at a time is not the same word-based processing, Medlock does not disclose all of the limitations of the claim.

For the reasons presented above, Medlock does not disclose all of the limitations of the claim because Medlock does not disclose word-based processing to obtain a correlation value, as recited in the claim. Accordingly, Applicants respectfully assert claim 1 is patentable over Medlock because Medlock does not disclose all of the limitations of the claim.

Independent Claim 6

Applicants respectfully assert independent claim 6 is patentable over Medlock at least for similar reasons to those stated above in regard to the rejection of independent claim 1. In particular, claim 6 recites “executing one or more software based instructions to carry out word-based, hard-wired operations to process the first and second words in order to obtain a correlation value” (emphasis added).

Here, although the language of claim 6 differs from the language of claim 1, and the scope of claim 6 should be interpreted independently of claim 1, Applicants respectfully assert that the remarks provided above in regard to the rejection of claim 1 also apply to the rejection of claim 6. Accordingly, Applicants respectfully assert claim 6 is patentable over Medlock because Medlock does not disclose word-based processing to obtain a correlation value, as recited in the claim.

Dependent Claims

Claims 2-5 and 7-13 depend from and incorporate all of the limitations of the corresponding independent claims 1 and 6. Applicants respectfully assert claims 2-5 and 7-13 are allowable based on allowable base claims. Additionally, each of claims 2-5 and 7-13 may be allowable for further reasons.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the amendments and the remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-3444** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-3444** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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